KALA AZAR AND BED BUGS

There has been a disposition for some years to seek to fasten on the bed-bug the responsibility for transmitting some of the infections diseases. The habits of the animal lend decided substance to these expectations and the odium in which it is held doubtless makes its case the more hopeless.

Capt. W. S. Patton, I. M. S., (Ind. Med. Gaz., Feb. 19, 1912), reports that he has, by feeding *Cimex rotundatus* and *C. lectularius* on a case of Kala Azar, in whose blood the parasite had been identified, discovered an extended development of the parasite in these bugs. He also discovered that in bugs, in which the developing forms are present, again fed on the blood of a Kala Azar case, the flagellates are destroyed within 24 hours. However, if the bugs are not fed the second time the development goes on and is completed by the 10-12th day after the single feed. The parasite goes thru its complete cycle in both species. By the 7th-9th day the bug swarms with the flagellate stage in masses of rosettes. It is also claimed that the bugs do not contain, naturally, a flagellate.

CELL SIZE AND NUCLEAR SIZE

Conklin (Jour. Exp. Zool. Jan. 1912) in an elaborate paper based on a series of experiments and observations on *Crepidula* and *Fulgar* gives a most interesting series of conclusions concerning the size of cells and nuclei. Among these may be mentioned:

1. Inequality of cell division is due to internal causes rather than to pressure from without; and the controlling factors within are more intimate than the mere presence of metabolic substances such as yolk.

2. The size ratio between plasma and neucleus in the different blastomeres of an egg is not constant nor self-regulating; but seems to depend rather on the rate of cell division.

3. The inciting cause of cell division seems to lie in the coincidence of centrosomal, chromosomal, and cytosomal rhythms.

4. The size of the nucleus is dependent upon at least three factors: the initial quantity of chromatin; the volume of the cytoplasm; the length of the resting period.

5. In *Crepidula* the volume of cytoplasm more than doubles during the passage from the 1-cell stage to the 24-cell stage; the

yolk decreases in volume nearly one-half in that time; and the entire embryo has less mass at the 24 than at the 1-cell stage. This shows that the protoplasmic growth during cleavage occurs at the expense of the yolk.

6. The average increase of protoplasm for each division in early cleavage (32 cells) is 6 per cent; of nucleus, 5-9 per cent; of chromatin, 8 per cent.

PROTOZOA IN HAY INFUSIONS

Woodruff (Jour. Exp. Zool., Feb., 1912), discusses a number of series of experiments on hay infusions with a view to determining the sources and sequence of their protozoan population. To determine the sources, he (1) used sterilized hay and water, exposed to air; (2) sterilized water with fresh hay, and air excluded; (3) ordinary tap water, with sterilized hay and air excluded; and (4), as controls, fresh hay, tap water, and loosely covered vessels. The experiments, which are valuable to the ordinary laboratory worker, furnish the following conclusions:

1. Air, water, and hay are all sources of protozoa in infusions,—the air being least, and the hay most, important. But ordinary hay, added to ordinary tap water, while furnishing some protozoa, will not produce a sufficient number of representative protozoa for the study of the full sequences.

2. In order, therefore, to study standard sequences it is necessary to "seed" the infusions with matter from general laboratory cultures. In such "seeded" infusions a definite sequence of appearance, of dominance (or maximum) and of disappearance was observed. The sequence of appearance at the surface of the infusion is as follows: Monad, Colpoda, Hypotrichida, Paramecium, Vorticella, and Ameba.

3. The middle of the infusion is inhabited chiefly by free-swimming types brought there by over crowding at the top and bottom, and does not manifest so definite a sequence.

4. The appearance, in appreciable numbers, of any of these types (except Ameba), at the bottom of the infusion, coincides with, or quickly follows, its surface maximum,—and seems to indicate the beginning of its decline.

5. As biological elements entering into the determination of